What is claimed is:

1. A remote maintenance system comprising:

a center server that is located in a service center for performing maintenance of an electrical appliance; and

a home server that is located in each house and monitors a status of an electrical appliance in a house,

wherein the center server and the home server are connected via a communication line,

the home server includes:

a status value acquiring unit operable to acquire a status value of each electrical appliance;

a failure model receiving unit operable to receive from the center server a failure model which is information defining a method for deriving a decision whether the electrical appliance is failed or not from the status value; and

a failure deciding unit operable to decide whether the electrical appliance is failed or not based on the acquired status value and the received failure model using qualitative reasoning, and

the center server includes a failure model updating unit operable to update the failure model and send the updated failure model to the home server.

2. The remote maintenance system according to Claim 1,

wherein the home server further includes:

a status value storing unit operable to store a status value at the time when the failure deciding unit decides that the electrical appliance is failed or not failed; and

a status value sending unit operable to send the stored status value to the center server,

the center server further includes a status value receiving unit operable to receive the status value from the home server, and

the failure model updating unit updates the failure model based on the received status value of the electrical appliance.

3. The remote maintenance system according to Claim 2, wherein the failure model includes a standard value indicating a decision basis for the failure deciding unit to make the decision.

4. The remote maintenance system according to Claim 3, wherein the failure model includes a program for having the failure deciding unit decide whether the electrical appliance is failed or not using the standard value and the status value.

5. The remote maintenance system according to Claim 4, wherein the failure model updating unit updates the standard value using a vector quantization method based on the status value.

6. The remote maintenance system according to Claim 5, wherein the standard value indicates a normal range of a relationship between the status value stored in the status value storing unit and a preset condition of the electrical appliance at the time when the status value is acquired.

7. The remote maintenance system according to Claim 6, wherein the standard value of the failure model for an air conditioner includes an upper limit value of a compressor rotational frequency during cooling operation and heating operation of an air conditioner, and

the failure deciding unit decides that an air conditioner is failed when a compressor rotational frequency during cooling operation or heating operation of the air conditioner exceeds the upper limit value.

8. The remote maintenance system according to Claim 6, wherein the standard value includes a coefficient of a curve indicating a boundary between a normal range and an abnormal range when a pair of the status value and the preset condition is plotted on a multi-dimensional coordinate.

9. The remote maintenance system according to Claim 8, wherein the failure model updating unit updates the coefficient of a curve by a least squares method based on a plurality of points indicating pairs of the status values and the preset conditions on the coordinate.

10. The remote maintenance system according to Claim 8, wherein the standard value includes a coefficient of a curve indicating a boundary between a normal range and an abnormal range on the coordinate, when an applicable electrical appliance is an air conditioner, the preset condition is a temperature difference between a preset temperature and a room temperature during cooling operation or heating operation of the air conditioner, and the status value is a lapsed time until the room temperature reaches the preset temperature.

11. The remote maintenance system according to Claim 8, wherein the program is a program for having the failure deciding unit decide whether the point indicating the pair of the preset condition and the status value on the coordinate is located within the normal range of the curve.

12. The remote maintenance system according to Claim 11, wherein the failure model includes a program for having the status value acquiring unit acquire a predetermined status value at a predetermined timing.

13. The remote maintenance system according to Claim 12,

wherein the home server further includes a customer display unit operable to display failure information of the electrical appliance,

the failure deciding unit sends information specifying contents of a failure of the electrical appliance to the center server when the failure deciding unit decides that the electrical appliance is failed, and

the center server further includes:

a holding unit operable to hold different contents of failure information which are prepared beforehand for a customer and a serviceman separately corresponding to a failure which can occur per model of the electrical appliance;

a failure information sending unit operable to receive information specifying contents of a failure of the electrical appliance, specify failure information for a customer among the information held in the holding unit, and send the specified failure information to the home server; and

a serviceman display unit operable to receive information specifying contents of a failure of the electrical appliance, specify failure information for a serviceman among the information held in the holding unit, and display the specified failure information for a serviceman.

14. The remote maintenance system according to Claim 13,

wherein the failure model receiving unit receives the failure model corresponding to each of the electrical appliance from the center server,

the failure deciding unit decides a failure of the electrical appliance according to the failure model corresponding to each of the electrical appliance, and

the failure model updating unit sends to the home server the updated failure model with indication of the corresponding electrical appliance which is decided to be failed.

15. The remote maintenance system according to Claim 14, wherein the home server further includes:

a new electrical appliance detecting unit operable to detect an electrical appliance which is newly connected to the home server; and

a failure model requesting unit operable to request the center server to send the failure model corresponding to the electrical appliance when the new electrical appliance is detected,

the failure model receiving unit receives the requested failure model, and

the failure deciding unit decides whether the new electrical appliance is failed or not using the received failure model.

16. The remote maintenance system according to Claim 13, wherein the home server further includes a failure model holding unit operable to hold a failure model per model of the electrical appliance which is located in each house, and

the failure deciding unit decides whether the electrical appliance of a same model is failed or not using a same failure model.

17. The remote maintenance system according to Claim 16, wherein the center server further includes:

an appliance information holding unit operable to hold information regarding an electrical appliance which is located in each house of a customer who makes a maintenance contract of the electrical appliance with the service center; and

a failure model distributing unit operable to specify a house

where an electrical appliance of a model corresponding to the updated failure model by referring to the information held in the appliance information holding unit, and distribute the updated failure model to the home server of each specified house.

18. A remote maintenance system comprising:

a center server that is located in a service center for performing maintenance of an electrical appliance; and

a home server that is located in each house and monitors a status of an electrical appliance in a house,

wherein the center server and the home server are connected via a communication line,

the home server includes:

a status value acquiring unit operable to acquire a status value of each electrical appliance;

a failure model receiving unit operable to receive from the center server a failure model which is information defining a method for deriving a decision whether the electrical appliance is failed or not from the status value;

a failure deciding unit operable to decide whether the electrical appliance is failed or not based on the acquired status value and the received failure model using qualitative reasoning; and

a failure model updating unit operable to update the failure model based on the status value of the electrical appliance,

wherein the failure deciding unit further decides whether the electrical appliance is failed or not based on the acquired status value and the updated failure model using qualitative reasoning.

19. The remote maintenance system according to Claim 18,

wherein the failure model includes a standard value indicating a decision basis for the failure deciding unit to make the decision.

20. The remote maintenance system according to Claim 19, wherein the failure model includes a program for having the failure deciding unit decide whether the electrical appliance is failed or not using the status value and the standard value.

21. The remote maintenance system according to Claim 20, wherein the failure model updating unit updates the standard value based on the status value using a vector quantization method.

22. The remote maintenance system according to Claim 21, wherein the home server further includes a status value memorizing unit operable to memorize a status value at the time when the failure deciding unit decides that the electrical appliance is not failed,

the standard value is a coefficient of a primary curve indicating a standard of a normal range when a pair of the status value memorized in the status value memorizing unit and a preset condition at the time when the status value is acquired is plotted on a two-dimensional coordinate, and

the failure model updating unit updates a coefficient of the primary curve by a least squares method based on a point indicating the status value and the preset condition on the two-dimensional coordinate.

23. The remote maintenance system according to Claim 22, wherein the failure model includes a program for having the status value acquiring unit acquire a predetermined status value at a predetermined timing.

24. The remote maintenance system according to Claim 23, wherein the home server further includes a customer display

unit operable to display failure information of the electrical appliance,

the failure deciding unit sends information specifying contents of a failure of the electrical appliance to the center server when the failure deciding unit decides that the electrical appliance is failed, and

the center server further includes:

a holding unit operable to hold different contents of failure information which are prepared beforehand for a customer and a serviceman separately corresponding to a failure which can occur per model of the electrical appliance;

a failure information sending unit operable to receive information specifying contents of a failure of the electrical appliance, specify failure information for a customer among the information held in the holding unit, and send the specified failure information to the home server; and

a serviceman display unit operable to receive information specifying contents of a failure of the electrical appliance, specify failure information for a serviceman among the information held in the holding unit, and display the specified failure information for a serviceman.

25. A remote maintenance method for a remote maintenance system comprising:

a center server that is located in a service center for performing maintenance of an electrical appliance; and

a home server that is located in each house and monitors a status of an electrical appliance in a house,

wherein the center server and the home server are connected via a communication line,

the home server includes:

a failure model receiving step for receiving from the center

server a failure model which is information defining a method for deriving a decision whether an electrical appliance is failed or not from a status value of each of the electrical appliance;

a status value acquiring step for acquiring the status value;

a failure deciding step for deciding a failure of an electrical appliance based on the acquired status value and the received failure model using qualitative reasoning; and

a status value sending step for sending the acquired status value to the center server, and

the center server includes:

a status value receiving step for receiving the status value from the home server; and

a failure model updating step for updating the failure model based on the received status value of the electrical appliance and sending the updated failure model to the home server.

26. The remote maintenance method according to Claim 25,

wherein the failure deciding step further includes a specific information sending step for sending information specifying contents of a failure of an electrical appliance to the center server when it is decided that the electrical appliance is failed,

the center server further includes:

a specifying step for receiving the information specifying contents of a failure of an electrical appliance, and specifying failure information for a customer and a serviceman in the holding unit;

a failure information sending step for reading out the specified failure information for a customer from the holding unit that holds different contents of failure information which are prepared beforehand for a customer and a serviceman separately corresponding to a failure which can occur per model of an electrical appliance, and sending the specified failure information for a customer to the home server; and

a serviceman displaying step for reading out the specified failure information for a serviceman from the holding unit, and displaying the read-out failure information for a serviceman, and

the home server further includes a customer displaying step for displaying the received failure information for a customer.

27. The remote maintenance method according to Claim 25, wherein the home server further includes:

a new electrical appliance detecting step for detecting an electrical appliance which is newly connected to the home server; and

a failure model requesting step for requesting the center server to send the failure model corresponding to the electrical appliance when the new electrical appliance is detected, and

the failure model requested in the failure model requesting step is received in the failure model receiving step.

28. A home server that is connected via a communication line with a center server which is located in a service center for performing maintenance of an electrical appliance, and monitors a status of an electrical appliance in each house, comprising:

a status value acquiring unit operable to acquire a status value of each electrical appliance;

a failure model receiving unit operable to receive from the center server a failure model which is information defining a method for deriving a decision whether the electrical appliance is failed or not from the status value; and

a failure deciding unit operable to decide whether the electrical appliance is failed or not based on the acquired status value and the received failure model using qualitative reasoning,

wherein the failure deciding unit decides whether the electrical appliance is failed or not according to an updated failure

model after the failure deciding unit receives the updated failure model from the center server.

29. The home server according to Claim 28, comprising:

a status value storing unit operable to store a status value at the time when the failure deciding unit decides that the electrical appliance is failed or not failed; and

a status value sending unit operable to send the stored status value to the center server,

wherein the failure deciding unit makes the decision according to the updated failure model using the status value which is sent from the status value sending unit.

30. The remote maintenance system according to Claim 29,

wherein the failure model includes a standard value indicating a decision basis for the failure deciding unit to make the decision.

31. The remote maintenance system according to Claim 30,

wherein the failure model includes a program for having the failure deciding unit decide whether the electrical appliance is failed or not using the standard value and the status value.

32. The remote maintenance system according to Claim 31,

wherein the standard value indicates a normal range of a relationship between the status value stored in the status value storing unit and a preset condition of the electrical appliance at the time when the status value is acquired.

33. The remote maintenance system according to Claim 32,

wherein the standard value includes a coefficient of a curve indicating a boundary between a normal range and an abnormal range when a pair of the status value and the preset condition is

plotted on a multi-dimensional coordinate.

34. The remote maintenance system according to Claim 33,

wherein the failure model receiving unit receives the failure model corresponding to each of the electrical appliance from the center server, and

the failure deciding unit decides a failure of the electrical appliance according to the failure model corresponding to each of the electrical appliance.

35. A center server that is connected with a home server for monitoring a status of an electrical appliance in each house via a communication line, and is located in a service center for performing maintenance of an electrical appliance, comprising:

a status value receiving unit operable to receive from the home server a status value, a value of each electrical appliance at the time when it is decided that the electrical appliance is failed or not failed, which is stored in the home server; and

a failure model updating unit operable to update a failure model that is information defining a method for deriving a decision whether the electrical appliance is failed or not from the status value based on the received status value of the electrical appliance, and send the updated failure model to the home server.

36. A program for a home server which is connected with a center server which is located in a service center for performing maintenance of an electrical appliance via a communication line, and monitors a status of an electrical appliance in each house,

the program for having a computer function as:

a status value acquiring unit operable to acquire a status value of each electrical appliance;

a failure model receiving unit operable to receive from the

center server a failure model which is information defining a method for deriving a decision whether the electrical appliance is failed or not from the status value; and

a failure deciding unit operable to decide whether the electrical appliance is failed or not based on the acquired status value and the received failure model using qualitative reasoning,

wherein the failure deciding unit decides whether the electrical appliance is failed or not according to the updated failure model after the failure deciding unit receives the updated failure model from the center server.

37. A program for a center server which is connected with a home server for monitoring a status of an electrical appliance in each house via a communication line, and is located in a service center for performing maintenance of an electrical appliance,

the program for having a computer function as:

a status value receiving unit operable to receive from the home server a status value, a value of each electrical appliance at the time when it is decided that the electrical appliance is failed or not failed, which is stored in the home server; and

a failure model updating unit operable to update a failure model which is information defining a method for deriving a decision whether the electrical appliance is failed or not from the status value based on the received status value of the electrical appliance, and send the updated failure model to the home server.